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United States Department of the Interior

FISH AND WILDLIFE SERVICE
TEWAUKON NATIONAL WILDLIFE REFUGE
RR #1, BOX 75
CAYUGA, NORTH DAKOTA 58013

MEMORANDUM

February 9, 1984

To: WR Refuge Supervisor, ND
Denver, CO

From: Refuge Manager, Tewaukon NWR
Cayuga, ND

Subject: 1984 Annual Water Management Plan

Attached are location maps and a chart of the Pool maximum acreages.

1983 Water Use History

None of the four watersheds (Wild Rice River, Frenier Dam outlet, Sprague Lake ditch, LaBelle Creek) flowed to any significance this spring. Heavy, localized thunderstorms in June and July provided the only inflows as LaBelle Creek flowed into Lake Tewaukon.

Lake Tewaukon (Pool 1): The lake was frozen 1.7 feet low at 1146.3 MSL until ice out on March 31, 18 days earlier than last year. No inflows occurred until minor flow was received from LaBelle Creek due to thunderstorms in June and July. Since it has become a major drainage ditch, no doubt this farm field runoff was loaded with fertilizer and pesticides as well as silt. Heavy and nearly continuous algae blooms told the story but, luckily, no fish kills were observed. Sago production was average thanks, no doubt, chiefly to the very low carp population. Freeze-up occurred November 23 and 24 at 1144.96 MSL, 3.04 feet low in a lake with a maximum depth of 9.5 feet.

Parker Bay (east end of Lake Tewaukon): After four years of excluding water the Bay finally dried up the spring of 1982 and an excellent cattail, bulrush and sedge response occurred that summer. On April 4, 1983 the structure supplying the Bay was cleaned by backhoe and 9" of water gravity flowed in from West Parker Bay (causing it to drop about 2 feet). Excellent waterfowl use of the flooded plants occurred and the West Parker Bay draw down was beneficial to increase the cattail-sedge edge and promote a fish kill this winter. By late July the Bay was dry again and the emergent vegetation was booming so about 4" of water was turned in. By early fall levels again were very low and about 18" of water was added before the supply ran out. Duck, goose and swan use was excellent. Muskrats moved in and 6-10 houses were built.

Cutler Marsh (Pool 2): This marsh began the year below gauge level and received only minor inflows from Pool 4 via Pool 3. It froze in November very low at 1147.5 MSL with the west end dry and the deeper, south end only 2.5 feet deep. About one foot of water was dumped into East White Lake to save it for waterfowl nesting in April. The Wild Rice River channel was so low in June that two men in a canoe couldn't wade and push through. It continued becoming 100% choked by cattails.

Pool 2A: This marsh was dry all year. Taking advantage of this, the corroded CMP riser board control structure was replaced and the dike broadened for extra strength against muskrat burrowing. In anticipation of next spring's inflows, irregular openings were cut in the center of the pool and, hopefully, the mowed cattails will flood out.

Maka Pool (Pool 3): No inflows were received except for water flowed out of Pool 8. The pool started the year at 1155.2 MSL, was 1154.95 MSL on April 1 and continued down all year. By fall it was extremely low with rapid cattail encroachment of the open areas becoming a major problem.

River Pool (Pool 4): Began the year low at 1159.05 (April 3) but high enough to "steal" water starting April 4 for the lower pools - since Hepi Lake water would soon be available for refilling. By April 19 it was down to 1156.9. After removing an upstream beaver dam, the pool refilled from the Hepi Lake dewatering to 1157.45 by May 20 and 1158.25 by June 1. It was drawn down to about 1158.0 and left for the year. By fall it had dried to below the gauge again.

Pool 3A: Was the best pool this year. It was low but held good water all year.

Pools 5,6,7,7A: No inflows were received and these units were dry all or nearly all year.

Hepi Lake (Pool 8): Taking advantage of low water levels and no inflows, a long-term goal was reached as this pool was dewatered to increase cattail, bulrush, sedges and aquatics. This was accomplished by lowering and enlarging the north outlet structure to drain the Lake north into Pool 9. Also a 575' length of 12" PVC pipe was laid in a backhoe trench (maximum depth of the cut was 14') northeast through a hillside so Pool 9 would fill only to a desirable depth before spilling through the pipe and downhill to the Wild Rice River. Chris Schuler and Rob Hoflen did an excellent job planning out and accomplishing the project.

Dewatering began May 17; the lake was down to a small 1" deep puddle by about June 15 and was totally dry by early July. Due to logistics, the work couldn't be completed sooner as would have been preferred to reduce possible damage to duck nesting but the pair counts indicated a very low breeding population this spring. Heavy shorebird use occurred, as expected, with 30 American avocets, 250 marbled godwits and many hundreds of small sandpipers observed on June 20. Vegetative response to the draw down was excellent with smartweeds, wild millet, a low sedge and dock all coming on very strongly by mid-August. By late September a good scattering of small cattail and bulrush (and cottonwood) plants were established.

Pool 9: Used as a drainway for Hepi Lake as above, it became over-full by about one foot because the long 12" culvert did not run full due to friction and the 16" short culvert out of Hepi Lake supplied water very rapidly. (The 16" culvert was used because it was on hand and because it was judged desirable to build a good head in Pool 9 to push through the long culvert. I would make both pipes 16" if doing another such project.) The over-filling was not relieved until about the end of June and all but the outer edge of cattails were killed. They should recover in one or two seasons. Judging from the large numbers present, a black tern nesting colony took advantage of the floating mats of dead cattail debris.

Pool 10: This small marsh is too high to back-fill from the drawn down Hepi Lake. Spring runoff was insignificant so it remained dry again this year (as did nearly all other similar cattail sloughs).

Pool 11 (West White Lake): Started the year low with water only in the east end. Unfortunately it dried up rapidly as a Canada goose incubated her clutch on a nesting grass bale. She lost the race; her nest was broken up after water dried to mud.

A project was initiated this fall to divert some of the Frenier Dam spring outflow down the old channel into this pool. The major landowner involved agreed and RO (EN) approval was received. Just prior to meeting with the Sargent County Water Management Board, which owns the Dam, the landowner changed his mind and objected to the project for several nebulous reasons. So the plan was dropped. Only in the rare years of above average moisture will this pool reach the depth needed to drown back encroaching vegetation and promote muskrat reestablishment.

Pool 12 (East White Lake): To salvage the nesting season, one foot of water was flowed in between April 4-12. By late June the water depth was dropping rapidly and it was decided to not fight Nature, "go with the flow" and allow dewatering to occur. According to Chris' memory, the pool hasn't been dried out since about 1973. By about late July it was dry and rapid cattail and sedge edge increase and some open area invasion occurred.

Pool 14 (Sprague Lake): As covered last year, considerable work and diesel fuel was invested to pump this 183 acre lake down so it would "surely" freeze out the heavy carp infestation. The heavy, steel carp barrier was welded and installed in February. Along came a record mild winter and no carp kill occurred. But no inflows were received either. So the lake evaporated down all season and froze at a maximum depth of 17". A good increase in shoreline cattails and sedges developed as a benefit to this draw down. By year's end, no doubt, it was frozen to the bottom thanks to the bitter December weather.

Pool 13 (Mann Lake): This unit continued dry by plan (though flooding was impossible anyway) to encourage cattails, bulrush and sedge establishment. As an experiment to cultivate and aerate the bottom, a cooperative farmer was allowed to grow millet, using no herbicides. He had a good crop with plenty of waste for wildlife. No further farming will be done and the effects on establishment of the natural plants will be monitored in 1984.

Pool 16 (Horseshoe Slough Group): These seven large marshes received no inflows and were dry all year, like 1982.

To facilitate water management planning and operation by new employees, Chris Schuler mapped the location of every Refuge water control structure on a master map. He also described each of the 42 concrete or steel structures and marked the direction of water flow.

1984 Planned Water Management

If 1983 repeats itself and little spring inflows occur, the 1984 Plan will be simple: hold all the water we have for maximum waterfowl production. However,

if good runoff occurs, the following management objectives will be attempted.

Pool 1 (Lake Tewaukon): Presently very low at 1145.0 MSL. Overfill to approximately 1149-1150.0 MSL for two to five days to flow water into adjacent, dry wetlands in the Krause WPA, Tewaukon (State) WMA and Refuge. Then drop the Lake back to the maximum management depth of 1148 MSL for sport fishery habitat.

Parker Bay, on the east side of Lake Tewaukon, has completed a draw down cycle and should be flooded to the maximum possible without covering the newly established cattail and bulrush stands. This should be a maximum depth of 2½-3 feet. Water should be added as needed during the summer to maintain this depth for waterfowl production and maintenance.

Pool 2 (Cutler Marsh): Presently well below the gauge at 1147.5 MSL. Much of the pool is dry while the deepest (south) end is 2-3 feet deep, depending upon where the reading is taken. Target depth is 1150 to better flood the recently developed emergent vegetation for waterfowl use. Pool 2 will continue to be kept separated from Pool 1 to preclude reinvasion by adult carp attempting to move upstream to spawn.

Pool 3 (Maka Pool): Fill to approximately 1157.0-1158.0 MSL for one to two weeks to supply water to Pools 2A (and 3A if necessary). As quickly as possible and no later than May 1, stabilize water levels at 1156.5 MSL for over-water duck nesting. A minor fall draw down may be necessary to facilitate installation of a drop-log water control structure in the Nickeson Dike preparatory to flooding this Garrison Diversion Mitigation marsh in 1985 or 1986, as coordinated with the Bureau of Reclamation. Unless this draw down is needed, keep the fall depths as great as possible to increase muskrat use of the over-rank cattail growth.

Pool 4 (River Pool): Fill to target depth of 1162 MSL for waterfowl production especially over-water nesters. Draw down in September to reduce ice jamming next spring but only to approximately 1159 MSL. As much water as possible should be kept in the Pool to increase muskrat survival and activity in the rank cattail stands.

Poos 2A,3A,5,6,7,7A: Fill to maximum depth, if possible in order to flood out mowed off cattails. The pools will dry out rapidly through an average summer due to evaporation.

Pool 8 (Hepi Lake): After being completely drained last year, a good growth of cattails, bulrush and sedges began. This new growth must not be flooded out so the maximum depth should be approximately 2½ feet. However, in order to supply the downstream pools (7A,7,6,5), Pool 8 may be taken higher for a week or two. Every effort must be made to minimize the depth and length of time water is allowed to cover the new emergent vegetation. It is more important to protect the new vegetation in Pool 8 than to fully flood the downstream pools.

Pool 9: Maintain it closed off and allow it to dry out this year toward a maximum depth of three to four feet. However, it may be necessary to again overfill this pool if it is required to partially draw down Pool 8 as above.

Pool 10: No water manipulation possible.

Pool 11 (West White Lake): Presently dry. The west end is choked with cattails, bulrush vegetation. If spring inflows are inadequate, pump water from Pool 12 to a maximum depth of 3½ feet. Complete pumping by May 1, if possible, to stabilize water levels for over-water nesters.

Pool 12 (East White Lake): Presently dry. Gravity flow water from Pool 2 to a maximum depth of 4½ feet if pumping is necessary on Pool 11. Otherwise, fill to a maximum depth of 3½ feet and stabalize by May 1, if possible.

Pool 13 (Mann Lake): Presently dry and in millet stubble. Flood to a maximum of 12-18" deep for early duck courting and brood use. It should go dry by mid-summer allowing emergents to become established.

Pool 14 (Sprague Lake): As of February 2 the Lake was frozen to the bottom, 17" of ice. Fill to maximum pool for stocking and development of a game fishery free of carp.

Pool 16 (Horseshoe Slough): Presently dry. Target depth would be 1207.5 MSL in Pool A and 1206 MSL in the other six pools. With above average runoff, the Wild Rice River may fill this unit to target depths.

David G. Potter

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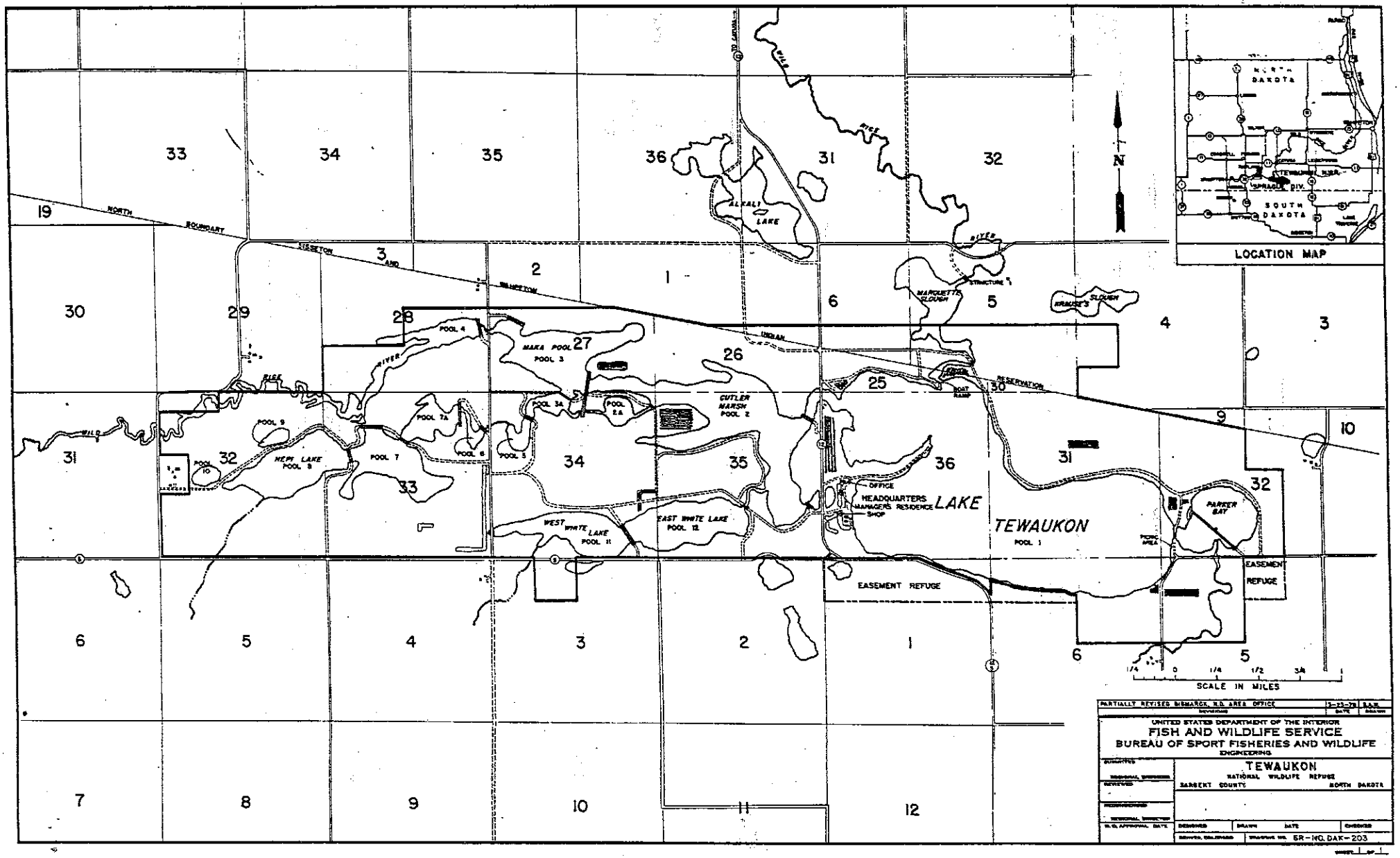
Attachments

TEWAUKON NWR



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TEWAUKON NATIONAL WILDLIFE REFUGE
Pools, Elevations and Acres

POOL	ELEVATION	ACRES
Pool 1 - Tewaukon	1149	1015
Parker's Bay	1149	95
Pool 2 - Cutler's Marsh	1152	246
Pool 3	1156	125
Pool 4	1159	108
Pool 5	1160	10
Pool 6	1165	6
Pool 7	1178	127
Pool 8 - Hepi	1179	106
Pool 9	1167	10
Pool 10	1173	5.5
Pool 11 - W. White Lake	1151	80
Pool 12 - E. White Lake	1147	103
Pool 13 - Mann	1207	57
Pool 14 - Sprague	1209	~~109~~ 186
Horseshoe Slough		244
Pool 1	1210	119.7
Pool 2	1206	42.5
Pool 3	1206	10.3
Pool 4	1206	30.3+
Pool 5	1206	24.5
Pool 6	1206	2.8+
Pool 7	1206	14.5